a means for creating a plurality of RF FM modulated pulse signals of identical shape and duration but different consecutive magnitude comprising a resistive multiport voltage divider/dividers electrically connected to said waveform generator/generators, said resistive multiport voltage divider/dividers providing plurality of said voltage pulse signals, a plurality of VCOs electrically connected to said resistive multiport voltage divider/dividers, a plurality of mixers electrically connected to VCRs, STALO or any other narrow-band or wide-band source of RF signals, and to a plurality of radiating elements in order to generate signals providing simultaneously the required beam or beams azimuth and elevation steering electronically and receiving target-echo return signals;

a means for producing the receiving signals which is electrically connected to plurality of LNAs amplifying the signals those are reflected from illuminated targets and received by a plurality of said radiating elements comprising a plurality of mixers electrically connected to said LNA outputs, a power combiner/combiners, and a plurality of said mixers creating said FM signals for transmitting part of said radar;

a means for processing target-echo return signals which is electrically connected to said receiving AESA or AESAs, said processing means being electrically connected with narrow band filters in order to enhance signal-to-noise ratio for detecting said target-echo return signals with said phase and power spectrum depending on angular target positions and range of a targets, and in order to get ultra-high angular and range resolution.

ABSTRACT

An ultra-high resolution radar system and technique for transmit or receive AESAs or that yields performance substantially greater than, that of conventional radar systems and techniques while being simple and inexpensive to manufacture. The device comprises the transmit/receive flat or conformal AESA or AESAs steering beam or beams non-dispersively, and creating RF FM modulated pulse signals of identical shape and duration through a resistive multiport voltage divider/dividers electrically connected VCOs, RF mixers and STALO or any other narrow-band or wide-band source of RF signals, and to a plurality of radiating elements in order to generate signals providing simultaneously the required beam or beams azimuth and elevation steering electronically and receiving target-echo return pulse signals.

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